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| Investigation: FIELDS | | | | |
| Progress accomplished this period: | | | | April 2013 Reporting Period |
| 1. | Project Management and Product Assurance | | | |
|  | a. | Project Management   * Cost to completion proposals from subcontractors. Intent is to clarify remaining scope of work and secure budgets for cost to completion planning.   + Reviewing proposal received from U of Iowa   + Awaiting proposal from UCLA   + Will prepare revised SOW and RFP for LASP in May. * Supported EDI GDU tiger team activities including HVOC review at UNH * Supported the following Acceptance Reviews   + EDI GDU SN3 * Supported the following PSRs:   + Ship Set 4 FIELDS, excluding SDP and GDU * Supported the following PERs:   + SCM Flight Spare Sensor (SN FM4)   + SDP SNs 11&12 * Supported the following TRRs:   + SCM Flight Spare Sensor (SN FM4) vibration and TV   + SDP SNs 11&12 vibration and TV * Supported the following FRBs   + No formal FRBs, but participated in status updates on RE launch latches, FM3 AEB DAC noise investigation * Received delivery of the following flight hardware items at UNH   + SDP Probes B3&B4 (for SDPs 5&6) (from KTH)   + SDP Probes A3&A4 (for SDPs 13&14) (from KTH)   + SDP Probes E2, E3, E4 (from KTH)   + SDP Preamp/Cable assemblies 13, 14, 15, 16 (from KTH);   + SDP BEBs 13, 14 (from KTH) * Delivery of the following flight hardware items from UNH to FIELDS partners   + 2 HV&Fil boards for EDI Guns (to IWF)   + 1 BGS for EDI Gun (to IWF)   + SDP Probes from SNs 1&2 for rework (B1 & B2) (to KTH)   + SDP Preamp/Cable assemblies 17&18 (to KTH)   + SDP SBEBs 17&18 (to KTH) * Delivery of the following flight hardware items from UNH or LASP to the IS and Observatories   + Ship Set 4 FIELDS components: CEB, AEB, SCM Sensor, SCM Preamp, DFG and AFG Sensors and harnesses   + EDI GDU SN3   + SDP SNs 9&10 * CDRL and contract deliverable submissions this month:   + None * Updated the Gun/GDE schedule. * Prioritized and coordinated the efforts of the UNH team, subcontractors, foreign partners, outside vendors and in-house workshops to optimize schedule performance. This month’s activities in this regard include:   + UNH team     - Priority given to the UNH EDI GDU HVOC and build effort. This feeds the Gun effort at IWF, the critical path for GDU and FIELDS. The SDP effort, given the shared commitments of key individuals, is most affected by the assumption of this task at UNH.   + UNH machine shop     - Fabricated housings and plugs for UNH-built EDI HVOCs     - Machined flats on batch of LEDs for the UNH-built EDI HVOCs     - Fabricated flight parts for SDP   + - UNH electronics shop     - Began assembly of first FM HVOCs for EDI GDU     - Continued assembly of EDI Sensor boards and Gun HV&Fil boards     - Support for SDP integration   + UNH TV     - Priority ranking: SDPs 11&12, SN5 GDU   + Vendors     - Coordination of vibration test activities with our vendor, BAE (upcoming tests for GDU and SDP).     - Surface treatment of FM SDP and EDI parts   + FIELDS team partners, IS and S/C teams     - Coordination of UNH support of the EDI Gun test effort on site at IWF. Myers and Singer traveled to IWF in April     - Coordination of UNH support for the SDP and AEB activities at KTH. King traveled to KTH/IRFU in April     - Continue weekly FIELDS team meetings     - Participate in weekly IS I&T meetings | | |
|  | b. | Product Assurance | | |
|  |  | Turco / Salwen   * EDI MCP Fm7 & FM8 PWA inspections * CEB FM4 TQCM measurement * AEB FM3 inspection for Parylene in connector * Ship Set #4 cleanliness inspect and bagging * SS #4 PSR support * SDP FM11 & FM12 TV support * SDP FM11 & FM12 TQCM measurment * EDI HV Opto-Iso life testing and data analysis support. * SDP 11, 12 post-vib FFT and TVAC testing support. * SDP5, 6 retrofit support.   Software Product Assurance (Heirtzler)   * CDPU and EDI SW is stable | | |
| 2. | Systems Engineering and FIELDS I&T | | | |
|  |  | Rau / Dors   * Investigated FM4 AFG anomaly * Performed FM4 CEB Acceptance test * Performed FM4 FIELDS CPT and In-rush testing * Performed EDI GDU SN03 magnetics and FIT testing * Performed EDI GDU SN05 EMI, magnetics and FIT testing * Performed SDP 11/12 In-rush testing * Prepared for and conducted FM4 FIELDS PSR, SDP09/10 PSR and GDU-3 Acceptance Review * Approved ECR for SDP IRD concerning sun angle alignments * Continued FIELDS verification entry into DOORS * Released FM4 ADP FIT, GDU SN03 FIT and GDU SN03 EMI Test reports * Released FM4 CEB EMI Test Report * Investigated FM2-FM4 CEB 16Hz magnetic violations and applied for waiver | | |
| 3. | Post-Delivery Support | | | |
|  |  | * Delivered FIELDS Ship Set 4 to IS deck 3 * Integrated SS4 to IS deck 3 and performed S2M, IPA and FIELDS IS-CPT * Delivered EDI GDU SN03 to IS I&T and installed on IS deck 3 for CPT * Delivered SDP SN09/10 to IS I&T and installed on IS deck 3 for CPT * Supported OBS-1 mag boom 2nd and 3rd segment deployments and FG magnetometer functional testing * Assisted in +Z ADP RE installation and functional test on OBS-1 * Integrated Magnetometers to OBS-4 for OBS functional test * Supported and reviewed WOA and procedure development at IS/OBS levels | | |
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| 4. | Science activities | | | |
|  |  | SWT and SWG   * Supported science activities as needed   Science data processing activities   * No activity this month | | |
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| 5. | Magnetometers | | | |
|  | a. | DFG |  | |
|  |  |  | * Processing of FM4 MAG FIT data * Investigations in the context of the DFG/Nulling Coil Anomaly * Remote support of DFG functional testing at Goddard | |
|  | b. | AFG |  | |
|  |  |  | Completed deliveries prior to April:   * Ship Sets 1-4 AFG Electronics, AFG and DFG Sensors and harnesses   April activities:   * Continued fabrication of DFG Spare Sensor (completed in early May) * Ramp up data reduction/software development activities * Preparation of cost to completion proposal as requested by UNH | |
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|  | c. | SCM | * SCM FM1 => SENSOR S/N FM1 + PREAMP S/N FM1   + - Delivered to UNH, 03 OCT 2011 * SCM FM2 => SENSOR S/N FM2 + PREAMP S/N FM2   + - Delivered to UNH, 25 JUL 2012 * SCM FM3 => SENSOR S/N FMS + PREAMP S/N FM4   + - Delivered to UNH, 25 JUL 2012     - FM3 harness delivered to UNH without the outgassing certification * SCM FM4 => SENSOR S/N FM3 + PREAMP S/N FM5   + - Delivered to UNH, 27 FEB 2013 * SCM FMS => SENSOR S/N FM4 + PREAMP S/N FM3   + - Sensor manufacturing complete. 3D measurements to be performed on April 09.     - Sensor PER held on April 04.     - Sensor vibration test completed     - Preamp vibrated safely at acceptance levels. Thermal vacuum complete.     - Following post thermal vacuum investigations, the Preamp S/N FM3 can be used as the spare model. Waiver submitted for approval.     - NCR => MMS-SCM-NC-PRE-140     - Waiver => MMS-SCM-RW-PRE-606 * NCR and alignment measurements report to be completed (MMS-SCM-NC-TRI-623-LPP and MMS-SCM-PR-TRI-622). | |
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| 6. | EDI | | | |
|  |  | Problems   * GDE converter foldbacks occurred during GDU SN5 Detector Characterization and T/V Test; * Two Single-sample red limit violations of MCP current occurred during Detector Characterization   Top level (GDU)   * Received 3 Maheu hats from Stone Machine; one is used in GDU SN5 T/V test to verify functionality * Ship set 1 - GDU SN 3   + FIT Test, Magnetics Test   + FIELDS level testing with FM4 CEB   + Acceptance Review   + Shipment to GSFC * Ship set 2 - GDU SN 5   + Detector Characterization   + FIT Test, EMC, Magnetics   + FIELDS level testing with FM4 CEB   + Installation in T/V chamber, started bakeout   Sensor   * Ship set 4 - SN 6   + Started final assembly * Ship Set 3 - SN 7 & 8   + MCP Supply Board population SN 7 & 8   + HV Connection Board population SN 7 & 8   + Digital Board BLT SN 7 & 8   + Sensor SN 7 assembly for preamp trimming   Gun - UNH efforts   * HV-FIL board SN 8 population * Started population of HV-FIL board SN 9 * Shipped HV-FIL board SN 4 & 7 to IWF   Gun - IWF efforts   * Ship set 4 - SN 4   + Assembled Gun * Ship set 4 - SN 6   + Board level test of DEFL1 and DEFL2 board   Optics   * Continued work on ship sets 3,4   UNH HVOCs and tiger team activity   * Completed fabrication and testing of Prototype’ UNH HVOCs for EDI GDU * Conducted Thermal Vacuum testing on 5 devices. (results encouraging) * Conducted Accelerated Life Testing on 5 devices. (results encouraging) * Presented April 8th, details of the design assembly and test of UNH ‘Prototype’ HVOCs to tiger team members visiting UNH. * Released assemble drawing. * Discussed with tiger team and PCB, screening and Qualification programs * Began test configuration * Conducted extended Accelerated Life Testing on 4 devices. (Results are steady with no breakdowns) * Procured additional HV diodes and discussed screening with ATC   + Visited ATC to review set-up and future screening tests.   + Shall provide test equipment to ensure proper testing of devices as well as addressing handling concerns. * Initial Flight housings have been made. * And a good portion of LED’s have been cut and polished. | | |
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| 7. | SDP/BEB/LVPS | | | |

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|  | a. | SDP/BEB/LVPS (KTH/IRFU/Oulu)  KTH/IRFU SDP BEB’s:   * Received units FM17-18 (16th) * All testing, Parylening and post testing completed for units FM13-14. * Units FM13-14 delivered to UNH on the 24th * Units FM15-16 completing final testing, should be ready for next trip to Sweden barring other work priorities   KTH/IRFU SDP Preamp/Boom Cable Assembly:   * Received assemblies FM17-18 on the 16th * Completed testing of units FM13-16, successfully. * Units FM13-16 delivered to UNH on the 24th   KTH/Oulu/IRFU Sphere / Yo-Yo Mechanism:   * Received at KTH probes B1-2 on the 16th * Probes B1-2 shipped to Oulu for reworked * Probes A3-4 shipped to KTH after rework at Oulu * Thermal vacuum testing of probes A3-4, B3-4, E2-4 * Probes A3-4, B3-4, E2-4 delivered to UNH on the 24th   KTH/IRFU/Oulu Management:   * Continue to work all issues related to testing, documentation, hardware, shipping and QA/PA and shipping needs.   KTH Product Assurance (OHB Sweden):   * Followed up with UNH on issues found during Parylene inspection of FM15-16:   + Suspect cracks in solder of chip resistors 1206, machine-soldered: Reviewed with UNH PA; decided to use as is. * Exchanges with KTH concerning the failure on AEB FM3 ABEB5 board at   -30 C   * Signature of Amendment n 3 for contract OHB Sweden 11-090 |
|  | b. | SDP/BEB/LVPS (UNH)  LVPS:   * Supported PSR of CEB4 with respect to LVPS. * Still await for incoming test of LVPS FM5   A-BEB’s:   * Supported and conducted several discussions with regards to noise found on AEB FM3 ABEB5. * Received AEB FM3 at UNH from LASP on the 10th   + Conducted passive study to verify determined if Parylene was causing a poor contact between inter-board connector. This was found to be not the case and so AEB FM3 unit was hand carried to KTH on the 16th for further investigation. At KTH it was determined that the noise resided in a component (U12, LM124).   + To remove this part in Sweden a study is under way to realize the viability of using the Swedish company Paratech to do this operation.   S-BEB’s:   * Received Unit FM13-14 from KTH. * Kitted these unit after inspection.   SDP MGSE:   * Stable. No new developments.   UNH SDP EGSE:   * Stable. No new developments.   SDP Preamp:   * Received Unit FM13-16 from KTH. * Performed incoming inspection and placed in safe storage.   SDP Mechanical / Electrical:   * Prepare SDP FM 11 &12 for vibration testing * SDP FM 11&12 Pre Vib FFT * SDP FM 11&12 Vibration Testing and report (BAE) * SDP FM 11&12 Post Vib FFT * SDP FM 11&12 TVAC installation, testing and report * Close-out of SDP FM 11&12 (Elevator and Door close) post TVAC * SDP FM 11&12 Pre clean and delivery to FIELDS * Clean Rm160 and Prepare SDP FM 5&6 for Sphere crimp and integration * SDP FM 5&6 Retofit and testing * SDP FM 5&6 Pre clean and delivery to FIELDS * Kitting for FM15 & FM16 in process   SDP Thermal:   * No New Developments.   SDP EMC:   * SDP FM 11&12, 5&6 test all in family.   FM SDP   * Final assembly of SNs 11 and 12. FFT and PER conducted successfully (3 Apr)  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | **Electrical** | **Mechanical** | |  | **Test** | | | | | | **Unit** | **Board Status** | **Assembled** | **Inspection** | **Test (FFT)** | | **Vibe** | **Test (FFT)** | **TV** | **Post Test** | | Test Unit FM1 | Needs rework | Modified & in test | NA, test unit | NA, test unit | | NA, test unit | NA, test unit | NA, test unit | NA, test unit | | FM2 | Needs rework | In Storage | NA | NA | | NA | NA | NA | NA | | FM3 | Completed | Completed | Completed | Completed | | Completed | Completed | Completed | Completed | | FM4 | Completed | Completed | Completed | Completed | | Completed | Completed | Completed | Completed | | FM5 | Completed | Completed | Completed | Completed | | Completed | Completed | Completed | Completed | | FM6 | Completed | Completed | Completed | Completed | | Completed | Completed | Completed | Completed | | FM7, 8 | Completed | Completed | Completed | Completed | | Completed | Completed | Completed | Completed | | FM9-10 | Completed | Completed | Completed | Completed | | Completed | Completed | Completed | Completed | | FM11-12 | Complete | Complete | Complete | Complete | | Complete | Complete | Complete | Complete | | FM13-14 | Complete | In-process |  |  | |  |  |  |  | | FM15-16 | In-process |  |  |  | |  |  |  |  | | FM17-18 | In-process |  |  |  | |  |  |  |  |   SDP QA:   * Continued work on individual deployer issues, update assembly activity sheet to reflect any changes, with review and complying of work sheets. * Monitored the assembly and test activities for the flight units   AEB (UNH)   * Supported FRB regarding DAC bias channel noise observed at cold temperature (SN FM3) |
|  | c. | SDP (LASP) (Preamp)   * Revised and released document # 126574 “MMS-SDP PREAMP FINAL ASSEMBLY INSTRUCTIONS”. Document revised to include the steps for the conformal coating of the inner guard side of the bootstrap. |

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| 8. | ADP | | |
|  | a. | ADP I&T activities   * Preparation for ADP RE observatory integration and test activities   + Revised/release test procedures   + Cleaned, bagged, and sent ADP GSE to Goddard * LASP traveled to Goddard to support observatory I&T activities * Integrated SN03 ADP Boom in the +Z position on observatory #2 * ADP RE SN03 integrated in the +Z position on Obs #1   + Performed RE mechanical integration   + Complete safe to mate and mated the RE to the AEB   + Performed a successful ADP RE horizontal deployment test   + Performed a successful FIELDS ADP functional test.   SN08 ADP RE Launch Latch opening anomaly activities   * Vibration testing on SN08 with reworked tip latch completed successfully. It was a complete 3-axis test at protoflight levels. * Single axis protoflight vibration test completed on the balance of reworked latches from ship sets #2 through #4. All tests were successful.   ADP Booms and Simulators   * ADP IS-level simulator box (SN01) switches upgraded to toggle switches and returned IS I&T at Goddard. * ADP Obs-level simulator box (SN02) completed, tested, and delivered to IS I&T at Goddard.   AEB   * FM3 AEB: Recreated the behavior seen during TVAC. Noise seen on bias DAC channel at low temperature. GSE ruled out as noise source. * Returned FM3 AEB to KTH for further investigation. | |
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| 9. | DSP, Thermal, Systems Engineering, Product Assurance and Management (LASP) | | |
|  |  | DSP   * Completed DSP ship set FM4 timing verification reports   Thermal   * No activities this month   Systems Engineering & Project Management   * Supported FM4 FIELDS PSR * Provided DSP SS3 and SS4 EIDPs to UNH * Provided AEB FM3 EIDP to UNH   Quality Assurance, Parts, and Materials Engineering   * Standard test support * Vibration test support * EIDP preparation | |
| 10. | CEB | | |
|  | a. | Hardware | |
|  |  |  | CEB (Rau, Dors, Bodet, Nolin)   * Completed FM4 CEB TV and post TV ambient FFT |
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|  | b. | CDPU Software, Support for Operations, I&T and Post-Delivery activities (Needell) | |
|  |  |  | * Supported CEB FM4 TVAC * Supported FIELDS FM4 I&T * Supported FIELDS FM4 delivery to IS3 @ GSFC * Supported Post delivery testing on all Observatories. * Supported Observatory Mission Simulation Planning discussions. |
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| 11. | GSE (Mello, Chutter, Bodet) | | |
|  |  | GSE Hardware   * No activity   FIELDS Simulator   * No activity   GSEOS & GSE Software   * Fields TLM spreadsheet updates * Integrate new CIDP TLM spreadsheets * Update CIDP TLM screens. * Updated sticky limit error checking * Telemetry Screen Improvements * Support FM4 CEB TV Testing * Support I&T Efforts * SOC Testing * Keep Software Repository Updated | |
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| 12. Problems encountered (some resolved) and updates this period | | | |

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|  |  | AEB   * [UPDATE] Out of Family Noise on Bias Voltage DAC (AEB FM3, ADP5 Side, TV cold) (PFR-10160.53-94-IP)   + After analyzing data from FM4 AEB TV testing, it was found that during FM3 AEB TV testing, out of family noise levels were found at the -30C plateau on the Bias Voltage DAC line.   + 5 Apr 2013: LASP test in thermal chamber reproduced the effect below -25C. The LASP testing confirmed the problem is on the BEB boards downstream of the DAC.     - Corrective action: return to UNH for inspection, rework and retest   + [UPDATE, 8 May 2013]     - Problem could not be isolated at UNH. Unit was returned to KTH for investigation by designer, Goran Olsson     - Summary, Olsson: problem traced to U12, The device is an LM124A     - The suggested action is to replace the U12 part, and to submit the device for further analysis.     - After the part is replaced, the Bias and Guard 1-3 need to be re-characterized, as the offset voltages will be different.     - Plan forward for rework and retest was agreed at FRB held 8 May 2013.   ADP RE   * [UPDATE] ADP RE launch latch opened during vibration test (SN08) (PFR-10160.53-92-IP)   + SN08 ADP Receiving Element tip Launch Latch opened inadvertently during x-axis random vibration testing.   + The currently leading failure hypothesis is tolerance buildup and/or out of family parts in the over-center release mechanism. Inspections on all launch latches are in process. Results and recommendations to be presented to FRB.   + Likely root cause: Tolerance buildup in the SN16 launch latch mechanism led to insufficient detent.   + Open work: LASP to define a new set of latch acceptance criteria, test the SN08 RE latch (SN16) to protoflight levels then show that all other units meet those criteria.   + 5 Apr 2013:     - Completed latch FRB investigation. Root case of the anomaly was tolerance buildup within the latch assembly which led to an overly-advanced rocker arm angle.     - FRB findings, updated latch acceptance criteria, and corrective actions were presented to the project. The proposed corrective actions were accepted. In addition to the latch that opened during vibration, LASP recommended that 5 additional tip latches be modified and retested so that they would meet the updated acceptance criteria.     - All 6 latches have been modified (SN11 – SN16), acceptance tested, cleaned, inspected, photographed, and functionally tested. The latches are ready for vibration testing.     - Vibration testing for SN08 RE and the modified latches is scheduled for 4/23.   + UPDATE, 7 May 2013:     - LASP conducted a successful vibration test on SN08 ADP Receiving Element. SN08 was tested at protoflight levels in three axes. No motion of the rocker arm was detected, and the post vibration latch deployment was successful.     - NCR awaits final approval   SDP   * [NEW, CLOSED] Torque monitor trip while retracting wire (SDP FM12) (PFR-10160.53-102-CL)   + While retracting boom cable after the TV hot deployments, the torque monitor on SDP FM12 started to creep up and then finally hit the operator-selected safe trip level stopping the retraction.   + A short amount (3 meters) of cable was deployed back out. The deployer was then commanded to retract again. The cable did not hang up and full retraction of the boom cable back into the deployer was successfully achieved. Subsequent deployment and re-stow operations were nominal. * [UPDATE] Wire deploy stopped during FFT-gearbox jam (SDP FM10) (open work: SNs 3,4,7,8) (PFR-10160.53-86-IP)   + Closed for SDP SNs 5&6, 9-18   + Open work for units yet to be returned to UNH includes acoustic noise measurements. * [UPDATED] Fine wire disconnected - crimp slip (SDP FM8), Open rework (SNs 3, 4) (PFR-10160.53-75-IP)   + Inspection revealed the fine wire from the probe/yo-yo assembly had come completely out of the crimp ferrule inside the preamplifier during the TV test.   + TV test of SDP SNs 7&8 was completed.   + Root cause investigation revealed inadequate control of the crimping process. FRB defined rework and retest activities.   + Crimp process redefined and approved   + Impact to other units:     - SNs 3-6 will be reworked     - New process applied successfully to 7-12     - New process applies for all subsequent units   + NCR to remain open until rework is complete on units already delivered: SNs 3-6. A plan for this rework was presented and agreed at the PSR for SNs 7-10.   + UPDATE: The probes were removed from SNs 5&6. Prescribed rework and retest was performed at UNH in April and early May 2013.   EDI   * GDE Converter Fold-backs (GDU FM5) (PFR-10160.53-96-IP)   + During the baseline full functional test in vacuum a GDE converter shutdown occurred after configuring the Gun for operation at 1keV   + Testing continued. Additional fold backs were observed during detector characterization and early in the TV test. The problem did not recur after the first occurrence early in the TV test. * Revised: HV amplifier failure during Gun/GDE calibration at IWF (S/N1 EDI Gun) (PFR-10160.53-89-IP)   + This record replaces that previously recorded in (PFR-10160.53-51-CL. The earlier record had erroneous data and was marked void.   + Problem with deflection channel 2 on Gun SN1 reported during Gun/GDE SN1 calibration at IWF.   + Conducted DPA of damaged parts.   + Cause: Likely a discharge event that propagated within the GUN.   + Replaced transistor Q33   + Replaced op amp U14   + Retest successful. Closure awaits paperwork. * [UPDATE] Negative Current spikes seen on Plate 7 Optocoupler during calibration (GUN SN4) (PFR-10160.53-85-AP)   + HK data analysis done at IWF indicates problems with several optocouplers. OC7 shows the isolated downward spikes. Manfred (IWF) is confident that replacing the positive side optocoupler will solve the issue. For OC6 the case is not as clear as we do not understand the behavior, so we may have to replace both optocouplers and maybe also the drive circuit for the LEDs.   + An FRB, conducted 4 Jan 2013, defined additional diagnostic steps. Another FRB will be conducted to review the diagnostic results prior to any disassembly   + Screening of optocouplers: all optocouplers in Gun FM4 were screened. It is pretty obvious that our screening process is not helping us to identify bad parts. Lack of being able to use elevated temperatures may be the most likely factor.   + Further activity with SN4 Gun awaits tiger team recommendation.   + 1 Apr 2013: UNH has identified screened IWF HVOCs to use for the rework of this Gun and has provided them to IWF.   + Awaiting DPA results on optocouplers sent to Goddard.   + UPDATE: Replacement parts have been integrated at IWF, board level testing was successful. * [CLOSED] GDE Converter Shutdown during TV power-on (GDU SN FM3) (PFR-10160.53-80-IP)   + Root cause determined to be current limit setting on GSE power supply. Retest successful upon reset of current limit setting.   + The functional test procedures will be modified to use a higher current limit setting of the GSE power supply for instrument power-on. After power-on the current limit will be set back to a lower value. Note that the instrument does not violate the inrush current requirements and the proposed modifications affect merely instrument level testing. There will be no impact on testing on the IS deck or observatory.   + CLOSURE,: Functional test procedures were updated to specify 0.8A initial current limit for power on. Associated CSTOL test scripts were updated to set current limit back to 0.4A for operation/testing after power-on. Functional test procedures and associated CSTOL test scripts were updated appropriately. * EDI GDU SN2 open work (PFR-10160.53-101-OP)   + GDU SN2 exhibited problems during the Gun calibration and component level TV test. See PFR-10160.53-56 [Thermal Vacuum Com Locks and Fold-Backs (EDI GDU SN2)] and PFR-10160.53-47 [GDE fold-back during SN2 Gun Calibration]. The unit was delivered to GSFC to participate in I&T, but needs to be returned to UNH and IWF for rework. * EDI GDU SN3 open work (PFR-10160.53-103-OP)   + GDU SN3 exhibited problems during the component level TV and vacuum tests. See PFR-10160.53-81 [GDE Converter Fold Back and Comm Locks observed during TV test (GDU SN FM3)] and PFR-10160.53-83 [Sensor FPGA reset (EDI GDU FM3)]. The unit was delivered to GSFC to participate in I&T, but needs to be returned to UNH and IWF for rework. * [UPDATE] Failure to set the Wehnelt voltage (EDI Gun SN4, Q4 on HV-FIL board SN4) (PFR-10160.53-78-IP)   + During inital tests in vacuum preparing for the calibration of Gun S/N 4 a failure to set the wehnelt voltage occurred (at IWF).   + The failure mode could be explained by a damaged transistor on the HV-FIL board.   + The HV-FIL board was replaced in SN4 Gun. The suspect board was returned to UNH for test and DPA of the suspected part, Q4.   + UPDATE, 8 May 2013     - The DPA revealed electrical overstress (excessive voltage) applied to the Emitter.     - Q4 was replaced in HV&Fil board SN4 and the board retest was successful.     - Since the exact location of HV discharge is unknown it is hard to know if other parts may have been stressed.     - Open work: Clarify the configuration at the time the problem was noticed. Determine what other boards and components might have been overstressed.   CEB   * [UPDATE] AFG Z-axis measurement unstable during early part of FM4 CEB TV test (PFR-10160.53-98-IP)   + During CEB TV the AFG z-axis measurement has exhibited anomalous behavior. During a time of quiet operation (no stimulus) the z-axis measurement has jumped and drifted by +\-50 to 100nT. During a time of stimulus the z-axis did not respond accordingly.   + In consultation with UCLA, the suspected cause is a slight change in contact resistance in some element of the GSE harnesss. The TV test is continuing.   + UPDATE:     - Completed the TV test as planned with no further anomalous performance observed.     - 11 Apr 2013, Summary of FRB:     - Perform the actions identified:       * Inspections of Sensor and box connector and connector saver (Turco) THIS WAS DONE. NO ANOMALIES OBSERVED.       * Resistance measurements on Sensor incl. thermal test (Rau) OPEN WORK       * Review of pre and post vibe FFT data for similar effects (Rowe) - THIS WAS DONE. NO ANOMALIES OBSERVED     - Continue with the FM4 CEB and FIELDS 4 testing working toward PSR.     - If unable to reproduce the symptom, use as is; register a risk for discussion at PSR. |

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| 13. Issues and concerns | | |
|  |  | From FIELDS PM   * The pace of Gun assembly and Gun/GDE test and calibration activity is slow given that a key engineer for this effort at IWF has left the institute. This is the critical path for GDU and FIELDS. UNH will provide support of testing activities on site at IWF as requested. Katherine Singer supported Gun board testing at IWF in April.   From LASP   * GSFC spacecraft mechanical has indicated that 50 to 100 Hz could be a problem even with analytical notches. GSFC S mechanical has recommended that Obs #1 vibration test results be evaluated prior to performing any other risk mitigation activities. * Ideally, the balance of ADP hardware can be shipped in one shipment after recalibration testing has been performed on the FM3 AEB and SS3 ADP RE. If ADP hardware is needed for observatory integration prior to completion of the recalibration test, two more ADP deliveries may be required. * PM continues to watch ADP overspending resulting for ADP RE Latch FRB, AEB FM3 DAC noise issue, and underestimated post-delivery support needs. |

NCR Summary: Provided separately (Excel file)

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| Activities planned for next reporting period | | | |
|  |  | Management | |
|  |  |  | * Continue to support the GDU tiger team. * Review UCLA and U of Iowa cost to completion proposals * Request cost to completion proposal from LASP * Continue to push open RFAs and NCRs to closure * Continue to prioritize and coordinate the work of the UNH team and its FIELDS partners. Similarly, prioritize and schedule work in the UNH electronics and machine shops and with outside vendors. Note the following.   + FIELDS Team, IS and S/C Partners:     - Continue to use the weekly FIELDS meeting for coordination of near-term activities. Post-delivery support activities are increasingly the subjects of these meetings. Dave Rau and Scott Tucker are key players in coordinating this support.     - Coordinate UNH support of the EDI Gun effort at IWF     - Coordinate IWF and U of Iowa support of GDU integration   + UNH team     - Completion of the HVOC fabrication and test activities will get priority if conflicts of resources, particularly with SDP, are encountered.     - UNH will work with IWF to support its Gun testing efforts.   + UNH Machine Shop:     - EDI HVOC fabrication     - GSE for HVOC testing     - Fabricate remaining SDP Parts   + UNH Electronics Shop:     - EDI HVOC assembly     - EDI Sensor stack boards     - SDP S/C Bracket Wiring     - Support for GDU integration   + BAE:     - Vibration services for SDP and GDU * Closely monitor status and schedule performance of team members. Identify schedule risks and provide assistance for mitigation if warranted. Work to minimize schedule slippage. * Coordinate problem investigations and associated resolution. * Support FRBs; * Support/staff T/V testing as needed * Update the Gun and GDE schedule. * Receive delivery of the following items at UNH   + FM3 AEB after rework (from KTH)   + Flight spare DFG Sensor (from UCLA)   + SDP BEBs SNs 15&16 (from KTH)   + SDP BEBs SNs 17&18 (from KTH)   + SDP Preamp/Cable assemblies SNs 17&18 (from KTH) * Make delivery of the following items from UNH to FIELDS partners   + Flight spare DFG sensor (to IWF) * Prepare and conduct the following PERs and associated TRRs   + SDP SNs 13 &14   + EDI GDU SN4 * Prepare for and conduct following PSRs or Acceptance Reviews.   + Acceptance Review of SDP SNs 11&12   + Acceptance Review of EDI GDU SN5 * Make or coordinate delivery of the following to GSFC IS or S/C teams   + SN5 GDU   + SDP SNs 5, 6, 11, 12   + Ship set #3 ADP Booms   + Ship set #2 and #3 ADP Launch Latches. * CDRL and contract deliverable submissions:   + None planned * Support/staff T/V testing as needed * Update the Gun and GDE schedule |
|  |  | Product Assurance, Configuration Management, Parts, Materials, Facilities | |
|  |  |  | Turco/Salwen   * HVOC assembly and test support * EIDP uploading * EDI FM5 TQCM measurement * EDI sensor FM8 & FM9 PWA inspections * Coordinate FRBs as needed   Software Product Assurance (Heirtzler)   * Continue support for EDI and/or CDPU software testing as needed |
|  |  | Systems Engineering & FIELDS I&T | |
|  |  |  | Rau / Dors   * Update trend data and operating hours charts for FIELDS FM4 * Perform FIELDS testing on re-crimped SDP 05/06, SDP 11/12 and GDU-5 * Continue submitting FIELDS verification material for closure in preparation for MMS PER |
|  |  | Post-Delivery Support | |
|  |  |  | IS and Observatory Support FIELDS   * Support IS deck 3 CPT and Burst testing and delivery to S/C * Remove GDU SN03/02 from IS deck 3 and install on OBS-1 * Remove SDP 09/10 from IS deck 3 and install on OBS-2 * Deliver SDP 05/06 to GSFC and install on OBS-1 * Deliver SDP 11/12 to GSFC and install on OBS-4 * Deliver GDU SN05 to GSFC and install on OBS-2 |
|  |  | Science | |
|  |  |  | SWT and SWG   * Support science telecons as needed   Science data processing activities   * Continue work on MMS Science Data Products Guide |
|  |  | AFG | |
|  |  |  | * Finish DFG Spare Sensor fabrication. Planned delivery date 07 May 2013 * Submit revised FY13 to EOM mission budget * Continued data reduction/software development activities |
|  |  |  |  |
|  |  | DFG | |
|  |  |  | * Participation in AFG/DFG data processing and calibration meeting at UCLA * Remote support of DFG functional testing at Goddard * Expect to receive delivery of the flight spare DFG Sensor from UCLA |
|  |  |  |  |
|  |  | SCM | |
|  |  |  | * FMS Sensor thermal vacuum in May. * FMS overall calibration in June. |
|  |  | EDI | |
|  |  |  | Top level (GDU)   * Ship set 2 - GDU SN 5   + - Complete T/V Test     - Acceptance Review     - Ship GDU to GSFC * Ship set 4 - GDU SN 4   + - GDU Assembly, Bench test (FFT in air)   Sensor   * Ship set 4 - SN 6   + - MCP module assembly and final sensor assembly * Ship set 3 - SN 7   + - Preamp trimming, delay test, thermal test   Gun - UNH efforts   * Complete population of HV-FIL board SN 9   Gun - IWF efforts   * Ship set 4 - Gun SN 4   + - Calibrate Gun     - Deliver Gun and GDE to UNH for Assembly * Ship set 4 - Gun SN 6   + - Start assembly of Gun   Optics   * Continue work on ship sets 3,4     UNH HVOCs   * Continue assembly and test of first batch of devices * Continue fabrication of HVOC housings * Provide second batch of HV diodes and LEDs to vendor for screening. Place PO for screening and qualification |
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|  |  | SDP/LVPS/BEBs/Preamp/Probe (KTH/ Oulu/IRFU) | |
|  |  |  | SDP:   * Continue fabrication of Deployer test calibration set-up at IRFU. This is to provide high-resolution calibration data.   S-BEB’s & Preamp & Probe:   * Complete testing of SS#5 S-BEBs, preamp and probes. * Complete post test SS#4 FM17-18, S-BEBs; ship to UNH. * Prepare the test reports for the all shipped units. * Fix and test the next probes to be refurbished at Oulu. * Deliver SDP BEBs, associated preamp/cable assemblies and probes for SDPs 15-16 to UNH   A-BEBs and LVPS:   * Rework AEB FM3 ABEB5, and test   KTH Management and Product Assurance:   * Inspection of new SDP HW * Submission of Final inspection report for SDP FM13-16 * Acceptance data package preparation for all delivered hardware |
|  |  | SDP/LVPS/BEBs/Preamp/Probe (UNH) | |
|  |  |  | UNH SDP:   * FFT, PER, TRR, vibration test for SNs FM13 & FM14   LVPS and BEBs   * No activity planned |

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|  |  | ADP/SDP/DSP (LASP) | |
|  |  |  | QA/Parts/Materials   * Support the project as necessary.   DSP   * No engineering activities planned   ADP   * Deliver ADP SS3 Booms, SS2 Latches, and SS3 Latches to Goddard * Post-vibration functional testing of SN07 and SN08 RE * Support ADP I&T activities at Goddard   AEB   * Plan for FM3 AEB retest and recalibration after rework * If rework completed, begin FM3 AEB retest activities.   SDP   * Support SDP integration activities at UNH as requested.   Thermal   * Plan for FM3 AEB retest activities   Systems and Program Management   * Support requirement verification and EIDP prep * Begin work on cost to complete proposal |
|  |  |  | |
|  |  | CEB Hardware | |
|  |  |  | FM4 and FS CEB   * Compile and release CEB FM4 TV test report * Flight spare kits are complete. No further activity is planned. |
|  |  | CDPU Software, Support for Operations, I&T and Post-Delivery activities (Needell) | |
|  |  |  | * Support IS3 CPT/Bust Test * Support delivery of SDP5/6/11/12 and EDI GDU SN05 to GSFC * Continued Support of Observatory Mission Simulation planning * Support Post Delivery activities as needed |
|  |  |  |  |
|  |  | GSE (Mello, Chutter, Bodet) | |
|  |  |  | GSE hardware   * No planned activity   GSEOS & GSE Software   * Telemetry Screen Improvements * Support OBS & IS 1-4 Testing * Support I&T Efforts * SOC Testing * Keep Software Repository Updated     FIELDS Simulator (FS)   * No activity planed |
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